

distinct as claimed, and (2) there must be a serious burden on the Examiner if restriction is not required.

MPEP § 803 states that:

“If the search and examination of an entire application can be made without serious burden, the Examiner must (emphasis added) examine it on the merits, even though it includes claims to distinct or independent inventions.”

Applicants respectfully submit that the search and examination of all the pending claims in this case do not pose a serious burden to the Examiner. The article is a silicon carbide article that is produced by a process performed in the apparatus of claims 20 to 26. Silicon carbide is produced from gaseous precursors and the apparatus is used to make solid articles of silicon carbide from gaseous precursors of methyltrichlorosilicate and hydrogen (Specification, page 12, lines 24-33). Articles and methods of making the articles as well as the apparatus employed are often cross-referenced on the face of patents. Thus, searching one group of claims would necessarily involve the same search and substantially the same considerations of the art with respect to the other group of claims.

Further, Group I claims are classed in one class and one subclass, and Group II claims are classed in one class and one subclass. Applicants contend that searching only two subclasses does not present a serious burden on the Examiner.

The Office Action at page 2, paragraph 2 alleges that the shell of claims 27 to 33 may be made by a materially different apparatus, and that the shell need not be formed via chemical vapor deposition but by a molding apparatus. However, no document or explanation of how the shell having the recited novel features as set forth in the claims may be made by a different method. The Office Action has no basis for concluding that the shell of claims 27 to 33 may be made by a molding apparatus.

Thus, for the foregoing reasons, Applicants respectfully submit that a search and examination of all the pending claims in this application are not unduly burdensome. Therefore, Applicants respectfully request that the restriction requirement as between the claims of Groups I and II be withdrawn and that the application be examined as a whole.

Claims 27 to 30 and 33 were rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. 5,904,778 to Lu et al., and MEMS Clearinghouse Material Database. Applicants respectfully traverse this rejection.

In order for a document to anticipate a claimed invention, the document must disclose each and every element of the claimed invention. Lu does not teach a hollow silicon carbide shell having a ratio of external perimeter to wall thickness greater than 50. The 15 inches diameter is not the diameter of the silicon carbide component or cylindrical wall 22. The 15 inches refers to the overall dimension of the chamber, not the silicon carbide cylindrical wall 22 (Lu et al. col. 5, lines 45 to 54), let alone a hollow silicon carbide shell having a ratio of external perimeter to wall thickness greater than 50. Lu does not even disclose the thickness of any silicon carbide component of the chamber or any hollow silicon carbide shell. The 3mm thickness mentioned in the Office Action at page 3, paragraph 7 refers to a film thickness on a sintered silicon carbide portion of a chamber (Lu et al., col. 14, lines 52 to 58), not the thickness of a hollow silicon carbide shell having a ratio of external perimeter to wall thickness greater than 50. The Office Action is combining the dimensions of two distinct articles described in Lu to allege anticipation.

Claims 28, 29, 30 and 33 also are not anticipated by Lu et al. because claims 28, 29, 30 and 33 depend from claim 27 which is not anticipated by Lu et al. for the above reasons. Further, Lu does not teach a hollow silicon carbide shell wherein the ratio of external perimeter to wall thickness is 200 or greater.

The Office Action at page 4 alleges that the silicon carbide disclosed in Lu et al. has a density greater than 3.2 grams per cubic centimeter and anticipates the subject matter recited in claim 30. In order for a document to anticipate a claimed invention, the document must contain all the claimed features within the four corners of the document. In re Outtrup, 189 U.S.P.Q. 345 (C.C.P.A.). The Office Action at page 4 admits that Lu does not explicitly disclose the density recited in claim 30.

The Office Action alleges that because Lu discloses a silicon carbide with a metal impurity of less than 100 parts per billion the silicon carbide is “inherently near purity” and inherently has a density of at least 3.15 grams per cubic centimeter in view of MEMS Clearinghouse Material Database. Inherency is not established by possibilities or probabilities. The mere fact that certain things may result from a given set of circumstances is not sufficient. It is a well established rule that for a result to be deemed inherent, it is not sufficient that a person following the disclosure might obtain the result set forth in the count; it must inevitably happen. As just discussed in the Office Action admits that Lu does not explicitly teach a hollow silicon

carbide shell wherein the density of the silicon carbide is at least 3.15 grams per cubic centimeter (claim 30). MEMS does not disclose the purity silicon carbide. The Office Action has based its conclusion that the silicon carbide of Lu “inherently” has the density of the silicon carbide disclosed in MEMS, yet it is uncertain that the silicon carbide of Lu is identical to that of MEMS. Thus, it is not inevitable that the density of the silicon carbide of Lu is the same as disclosed in MEMS, and the limitation of a silicon carbide density of at least 3.15 grams per cubic centimeter is not inherently met. Accordingly, for the foregoing reasons, Lu et al. do not anticipate any of claims 27-30 and 33.

Applicants respectfully request withdrawal of the rejection of claims 27-30 and 33 under 35 U.S.C. § 102(e) over U.S. 5,904,778 to Lu et al. and the MEMS Clearinghouse Material Database.

Claims 31 and 32 were rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. 5,904,778 to Lu et al. Applicants respectfully traverse this rejection.

Lu does not teach or suggest a hollow silicon carbide shell wherein the external perimeter is in excess of 50 inches (claim 31), or a hollow silicon carbide shell wherein the external perimeter is in excess of 65 inches (claim 32). As discussed above, the 15 inch diameter refers to the overall dimensions of a chamber (Lu et al., col. 5, lines 45-54), not the diameter of a hollow silicon carbide shell having a ratio of external perimeter to wall thickness greater than 50. Also as mentioned above, the thickness of 3 mm refers to a thin film (Lu et al., col. 4, lines 52-58), not the thickness of a hollow silicon carbide shell. Lu is silent on the dimensions of a hollow silicon carbide shell as well as a hollow silicon carbide shell wherein the external perimeter is in excess of 50 inches (claim 31), and wherein the external perimeter is in excess of 65 inches (claim 32).

The Office Action at page 5, paragraph 9 alleges that the external perimeters in excess of 50 inches and in excess of 65 inches as recited in claims 31 and 32, respectively, would have been within the level of ordinary skill in the art. However, the Office Action is incorrect. The hollow silicon carbide shells wherein the external perimeter is in excess of 50 inches (claim 31) and in excess of 65 inches (claim 32) are novel and unobvious shells and would not have been within the level of ordinary skill in the art because such hollow silicon carbide shells could not have been made until the present invention. Prior to the present invention, hollow silicon carbide shells wherein the external perimeter is in excess of 50 inches (claim 31) and in excess of 65 inches (claim 32) suffered from the formation of propagated cracks (specification, page 14, lines

7-25). Thus, there would have been no reason or motivation to make such shells. No where does Lu et al. teach or suggest such hollow silicon carbide shells or a method of making such shells to prevent the propagation of cracks. It is only by reading Applicants' disclosure that a person of skill in the art would have been able to make the hollow silicon carbide shells with the external perimeter in excess of 50 inches and 65 inches. Basing an obviousness rejection on Applicants' own disclosure is improper. Accordingly, claims 31 and 32 would not have been obvious in view of Lu et al.

Applicants respectfully request withdrawal of the rejection of claims 31 and 32 under 35 U.S.C. § 103(a) over U.S. 5,904,778 to Lu et al.

Claims 27 to 33 were rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. 5,323,764 to Karni et al. and the MEMS Clearinghouse Material Database. Applicants respectfully traverse this rejection.

Karni et al. alone or in combination with MEMS Clearinghouse Material Database do not teach or suggest a hollow silicon carbide shell having a ratio of external perimeter to wall thickness greater than 50 (claim 27); a hollow silicon carbide shell wherein the external perimeter is in excess of 50 inches (claim 31), or in excess of 65 inches (claim 32). Karni also does not teach or suggest a hollow silicon carbide shell where the ratio of external perimeter to wall thickness is 200 or greater (claim 33). Karni et al. do not provide any reason or motivation to make a hollow silicon carbide shell as recited in any of claims 27 to 33. Karni is totally silent on any such dimensions recited in claims 27, 31, 32, and 33. Karni is completely silent on the dimensions of any silicon carbide articles, let alone teaching or suggesting ratios of external perimeters to wall thicknesses or the sizes of external perimeters of hollow silicon carbide shells.

The Office Action at page 5, paragraph 10 alleges that the perimeter and thickness of the shell recited in the present claims would have been within the level of ordinary skill in the art. However, the Office Action is in error. As discussed above, the hollow silicon carbide shells have external perimeters and ratios of external perimeters to wall thicknesses which would not have been obtainable until the present invention because of the problems of crack formation occurring (specification, page 14, lines 7-25). Thus, the external perimeters and ratios recited in the present claims would not have been within the level of ordinary skill in the art. It is only by reading Applicants' disclosure that a person of skill in the art would have been motivated to

make the hollow silicon carbide shells of the present claims. Basing an obviousness rejection on the Applicants' teaching is improper.

The Office Action at page 5, paragraph 10, alleges that the density limitation of claim 30 is "inherently" met by Karni in view of MEMS Clearinghouse Material Database. However, the doctrine of inherency is not applicable in an obviousness rejection. Thus, such a rejection is improper.

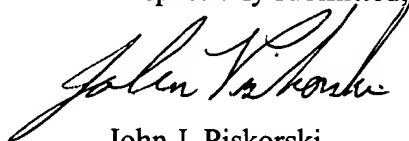
Claims 28, 29, and 30 also would not have been obvious in view of Karni alone or in combination with MEMS because claims 28, 29, and 30 depend directly from claim 27 which would not have been obvious over the applied documents for the reasons discussed above.

Applicants respectfully request withdrawal of the rejection of claims 27-33 under 35 U.S.C. § 103(a) over U.S. 5,323,764 to Karni et al. and MEME Clearinghouse Material Database.

Favorable consideration and allowance of claims 27 to 33 are earnestly solicited.

If the Examiner has any questions concerning this response or the application, or if he believes that the application is for any reason not yet in condition for allowance, he is respectfully requested to telephone the undersigned at the number set forth below in order to expedite allowance of the application.

Respectfully submitted,



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